

KIDUM 010 PCT.ST25.txt  
SEQUENCE LISTING

<110> State of Israel, Ministry of Agriculture, Agricultural Research  
Organization, The Volcani center,

Gal-On, Amit  
Zelcer, Aaron  
Wolf, Dalia  
Gaba, Victor P  
Antignus, Yehezkel

<120> ENGRAFTED PLANTS RESISTANT TO VIRAL DISEASES AND METHODS OF  
PRODUCING SAME

<130> KIDUM/010/PCT

<160> 21

<170> PatentIn version 3.3

<210> 1

<211> 1461

<212> DNA

<213> Cucumber fruit mottle mosaic virus

<400> 1  
tcgaaggcgg gtttttggac ggatatgcaa aatttttatg acgcttgtct gcccgggaat 60  
agttttgtgt tgaatgatta cgattctgtg actatgcggc tggttgataa tgagattaat 120  
ctgcaacctt gtaggttaac tctatctaaa gccgatcccc ttacagagtc tctgaagatg 180  
gagaaaaagg agtttttgat cccgcttggg aaaactgcta cggagcgtcc gcggatccct 240  
gggcttttag aaaatttgat agctatagtt aagaggaatt ttaatacacc ggatttagcc 300  
gggagtttag atatttctag tattagtaag ggtgtagtag ataacttctt ttccactttt 360  
ttgcgtgacg agcaattggc ggatcacctt tgtaaagtta ggtctcttag tctagagtct 420  
ttttccgcat ggtttgataa tcaatcaact tgtgctctgg gtcagttgtc taatttcgat 480  
tttgtggatc tgcctcccgt tgatgtttat aatcatatga ttaagaggca acccaaatcg 540  
aagttagaca cctcgattca gtctgagtat cccgcgttgc aaacgattgt ttatcatagt 600  
aaattagtgat atgcggtttt tgggtcccgtt ttccgttatc ttacttccga gtttttatct 660  
atggttagata atagtaaatt tttcttttat actagaaaac tccggatgat ttgcaagttt 720  
cttttccac actttcccaa taagcaggag tatgagattc tagagctaga tgtttccaaa 780  
tatgataaat cacagaatga tttcatcag gctgtggaga tgcttatttg ggaacgttta 840  
ggtctagatg atattcttgc taggatttgg gaaatggggc ataagaagac gcatatcagt 900  
gatttccaag ctgggattaa aactcttatt tattatcagc ggaaatctgg agatgttact 960  
acttttatag gtaatacttt tattatagct gcttgtgtcg cttctatggt tccgctgagt 1020  
cggagtttca aagctgcctt ttgtggtgat gattcactga tctatatgcc accgaatctg 1080  
gaatataatg acatacagtc gaccgcgaat ctcgtgtgga atttcgaggc taaactgtat 1140  
aagaagaaat atggttattt ctgtggcaaa tatgtgatcc atcatgcgaa tgggtgtatt 1200  
gtttatccgg atccgttgaa gctaatttct aaattaggca ataagagtct ggaaagttac 1260

## KIDUM 010 PCT.ST25.txt

gatcatttgg aggaatttag gatttctctg atggacgtag ctaaaccctt gttcaatgct 1320  
 gcttattttc atctttttaga tgatgctatc cacgagtatt ttcctagtgt tgggggtagc 1380  
 acgtttgcta ttagttcttt gtgcaagtat cttagtaata agcagttggt tgggtctcta 1440  
 ttcattaagc ctagtgtcta g 1461

<210> 2  
 <211> 1050  
 <212> DNA  
 <213> Zucchini yellow mosaic virus

<400> 2  
 tcaggcactc agccaactgt ggcagacact ggagccacaa agaaagacaa agaagatgac 60  
 aaagggaaaa acaaggatgt tacaggctcc ggctcaagtg agaaaacagt ggcagctgtc 120  
 acgaaggaca aggatgtaaa tgctggttct catgggaaaa ttgtgccgcg tctttcgaag 180  
 ataacaaaga agatgtcact gccacgcgtg aaaggaaatg tgatactcga cattgatcac 240  
 ttgctggagt ataagccgga tcaaattgag ttatacaaca cacgagcgtc tcatcagcaa 300  
 ttcgcctctt ggttcaacca agttaaaaca gaatatgac tgaatgagca acagatggga 360  
 gttgtaatga atggtttcat ggtttggtgc atcgaaaatg gcacgtcacc cgacattaac 420  
 ggagtatggg ttatgatgga cggtaatcag caggttgaat atcctttgaa accaatagtt 480  
 gaaaatgcaa agccaacgct gcgacaaata atgcatcact tttcagatgc agcggaggca 540  
 tatatagaga tgagaaatgc agaggcacca tacatgccga ggtatggttt gcttcgaaac 600  
 ttacgggata ggagtttggc acgatatgct ttcgacttct acgaagtcaa ttccaaaact 660  
 ccggaaagag cccgcgaagc tggtgcgcag atgaaagcag cagcccttag caatgtttct 720  
 tcaaggttgt ttggccttga tggaaatggt gccaccacta gcgaagacac tgaacggcac 780  
 actgcacgtg atgttaatag gaacatgcac accttgctag gtgtgaatac aatgcagtaa 840  
 agggtaggtc gcctacctag gttatcgttt cgctccgacg taattctaata atttaccgct 900  
 ttatgtgatg tctttacatt tctagagtgg gcctcccacc tttaaagcgt aaagtttatg 960  
 ttagttgtcc aggagtgccg tagtcctgtc ggaagcttta gtgtgagcct ctcacgaata 1020  
 agctcgagat tagactccgt ttgcaagcct 1050

<210> 3  
 <211> 190  
 <212> DNA  
 <213> Ricinus communis

<400> 3  
 gtaaatttct agtttttctc cttcattttc ttggtttagga cccttttctc tttttatttt 60  
 tttgagcttt gatctttctt taaactgac tatttttttaa ttgattgggt atgggtgtaaa 120  
 tattacatag ctttaactga taatctgatt actttatttc gtgtgtctat gatgatgatg 180  
 atagttacag 190

<210> 4

## KIDUM 010 PCT.ST25.txt

&lt;211&gt; 6562

&lt;212&gt; DNA

&lt;213&gt; Cucumber fruit mottle mosaic virus

&lt;400&gt; 4

gataaaagtt ttttacattg aacaaaaaca atatacatta cttttataac aatacacaaat	60
acatggcaaa cattacacaa catatcaatg ataccaggga ggctgcggcc gccgggcgta	120
atccgctcgt ggcgcagctg gcttcgaaga gggtttatga tgaggctgtc aagtctcttg	180
attctcaaga taaacgccct aagggtgaatt ttgctcgggt attgaccaca gagcagacga	240
ggaaggtcac ggagtcgtat ccggagtttt cgatcagtta tactgcatcg gccttatctg	300
tgcatagttt ggcgggggga ctgcatatt tagaagggtga gtacctgatg atgcaggttc	360
cctatgggtc gcccggtgtat gatatcggag ggaattactc gcaacatatg ctgaagggga	420
gagcatacgt acattgttgc aatccgtgcc tggacctgaa ggacattgca cgcaatgaga	480
tgtacaagga tgccattgac cgttatgtgc ataagaaacg cgaagcgcca cgttctaata	540
cttgaggggc tagggcagag tccgtccaag aaattaaaga cggccgtcta cttcatggc	600
agatcgtatg gtttcagcga tataaggatt gtccaagagc ggtcacctgt aatgatgtgt	660
tccaagagtg tcagtatgaa catacagagga gaggggatcg ttatgcagtt gctctgcatt	720
cgatttatga tattcctttc gaacagatag gacctgcgct cttgcggaag aatattaagg	780
ttctcttcgc cgcattccat ttctcagagg agttgctgtt ggggcaaagt tttggtgcct	840
tgccataat aggtgcgttc tttaccgtca atggtgattc cgtcgagttt cagttcgaag	900
aagaatctac tttgcattat tcacatagtt tccagaatat taggaagata gtaactagga	960
cgtattttcc tgcttcagat agggtagttt atgtaaagga gtttatgggt aagcgtgtag	1020
atactttctt tttccgtatg gttagggttg ataccatat gttacataag tcagtaggta	1080
cgtatcctgt ttgtgcgact aactatttct ctctcaagtc atcaccaata ttccaggata	1140
aagccacgtt ctctgtgtgg tttcccaaag ctaaatactaa ggtgggtgata cctatcttta	1200
agatgcaagg gtttttcaact ggggtctattg tggcagagaa gatgatgatc gatgctagct	1260
ttattcatac tgttatcaat catatctgta cttatgataa taaggcgta acgtggagga	1320
atgttcagtc cttcgtcgag tcaattcgggt cccgggttgt cgtgaatggg gtttcgggtgc	1380
ggagtgaatg ggatgtgccg gtagagcttt taactgatat ttcgttcacc gtttttttac	1440
tagtcaaagt caagaagacg cagatcgaga ttatgagtga taaaattgtg acacaacctc	1500
aggggttgat tgagcggatt gtacagagag tctctgaagc tttcgaagga tgtacagaag	1560
cggtgcaaaa ggcccttctt acttccgggt gggtcagaac tccagcggat gatctcggtc	1620
ttgatattcc tgagttgttc atggattttc atgattatct cagcgggtgtc ttcgaaagcc	1680
ggatgctcgt attgaggcga cggaccgtcg aaaaatgttt taagcgcttt ccgacaagct	1740
ttattcgact gtatcggaag ctttgtgagc gatattctgg gattgaattt gacttggagc	1800
aagtttctga tttttgccac caccatgacg tgaatcctgc tttgggtggga cccgtgatag	1860
aggcgatttt ttcgcagact gccgggatta cagtcactgg gctgtctaca aaatctgttg	1920

## KIDUM 010 PCT.ST25.txt

agtgggcagc cgcagaggct ttagcaccga cgtctgttga tatggattgt gacagtgatg 1980  
atgaggagct ggagcagaaa ttcccaaadc tgtccaatga ggagttgaga tatttgcatg 2040  
aggtgagatc gaaggaagcc gctttcttgg agctacaaga tacatttaaa accaagaagg 2100  
tgactgagtt agtgtctgtg ggagtaggag ctttgccaac gctaccgcgt cagtggatag 2160  
cgacagggaa ggttcacctt cctcagggtg gtctgtcggg tgggaagaat aaacattcgg 2220  
tcgagatatg tgacgaagat ggggtcagtg tgaagaatct gcatctgacg gagacgtgta 2280  
atctaagatt gaagaagact atcactccgg tgatctatac tgggcccata agagtgcgtc 2340  
agatggctaa ttatctcgat tatctttctg ctaatctggc cgctacgata ggaattctcg 2400  
aaagaattgt tcgatcgaat tgggtctggga atgaggttgt gcaaacttat ggtctttttg 2460  
attgtcaggc taataagtgg atcttactgc cctctgagaa aacacatagt tggggtgtct 2520  
gtctgactat ggatgataag cttcgtgttg tcctgctgca gtatgattcc gccggttggc 2580  
cgattgtaga taagtctttt tggaaagctt tttgtgtgtg tgcggatact aaagtttttt 2640  
ctgttattag gagtcttgag gttttgtctg ctttaccttt agttgaaccg gatgctaagt 2700  
atgtgctgat tgatggtgtg cctggttgtg ggaagacgca agagattata tcgagtgcgg 2760  
acttcaaaac ggatctaadc cttacacctg gtaaggaagc cgcggccatg atcaggcgta 2820  
gagccaacat gaaatatagg agtcccgtcg ccacaaatga taatgtgagg acttttgatt 2880  
catttgtaat gaataaaaag ccctttacct ttaagacact atgggtggat gaggggtctca 2940  
tggtgcatac cggctctgtta aatttctgtg tgaatattgc taaggtaaag gaagttcgta 3000  
ttttcgggtg tactaagcaa atccccttca ttaatagagt gatgaatttc gattaccac 3060  
tagagctgag gaaaattatt gttgatacgg tggaaaagcg gtacacgagt aaacggtgtc 3120  
caagggatgt gactcattat ttgaatgagg tatattccag tcccgtgtgt actactagtc 3180  
ctgtcgtaca ttcagttact acaaaaaaga ttgctggagt gggctttttg cgaccggaat 3240  
tgacggcatt gcctggtaag attataactt tcactcagaa tgacaagcaa acgcttttaa 3300  
aagcgggtta tgctgatgtg aatactgtgc atgaggtgca gggggagaca tatgaggaaa 3360  
cttccgtggg gagggctact gctacaccaa ttggtttgat ttcgcgtaag tctccgcatg 3420  
tgcttgttgc tctgtcgagg cataccaagg cgatgacgta ttatactgtg actgtggatc 3480  
ccgtgagctg tataattgct gatttgagga aggtcgatca aagtattctg tctatgtatg 3540  
cctctgtggc ggggaccaa tagcaattac agcaactatc cgtctatgtg catttgcccg 3600  
tgtcgaaggc gggttttttg acggatatgc aaaattttta tgacgcttgt ctgcccggga 3660  
atagttttgt gttgaatgat tacgattctg tgactatgcg gctggttgat aatgagatta 3720  
atctgcaacc ttgtaggta actctatcta aagccgatcc cgttacagag tctctgaaga 3780  
tgagaaaaa ggagtttttg atcccgttg gtaaaactgc tacggagcgt ccgcggatcc 3840  
ctgggctttt agaaaatttg atagctatag ttaagaggaa ttttaataca ccggatttag 3900  
ccgggagttt agatatttct agtattagta aggggtgtagt agataacttc ttttccactt 3960

## KIDUM 010 PCT.ST25.txt

ttttgcgtga cgagcaattg gcggatcacc tttgtaaagt taggtctctt agtctagagt 4020  
ctttttccgc atggtttgat aatcaatcaa cttgtgctct gggtcagttg tctaatttcg 4080  
attttgtgga tctgcctccc gttgatgttt ataatcatat gattaagagg caacccaa 4140  
cgaagttaga cacctcgatt cagtctgagt atcccgcgtt gcaaacgatt gtttatcata 4200  
gtaaattagt gaatgcggtt tttggtcccg ttttccgtta tcttacttcc gagtttttat 4260  
ctatggtaga taatagtaaa tttttctttt atactagaaa actccggatg atttgcaagt 4320  
ttcttttccc acactttccc aataagcagg agtatgagat tctagagcta gatgtttcca 4380  
aatatgataa atcacagaat gattttcatc aggctgtgga gatgcttatt tgggaacggt 4440  
taggtctaga tgatattctt gctaggattt gggaaatggg gcataagaag acgcatatca 4500  
gtgattttcca agctgggatt aaaactctta tttattatca gcggaaatct ggagatgtta 4560  
ctacttttat aggtaatact tttattatag ctgcttgtgt cgcttctatg gttccgctga 4620  
gtcggagttt caaagctgcc ttttgtggtg atgattcact gatctatatg ccaccgaatc 4680  
tggaatataa tgacatacag tcgaccgcga atctcgtgtg gaatttcgag gctaaactgt 4740  
ataagaagaa atatggttat ttctgtggca aatatgtgat ccatcatgcg aatgggtgta 4800  
ttgtttatcc ggatccggtg aagctaattt ctaaattagg caataagagt ctggaaagtt 4860  
acgatcattt ggaggaattt aggatttctc tgatggacgt agctaaacct ttgttcaatg 4920  
ctgcttattt tcatctttta gatgatgcta tccacgagta ttttcctagt gttgggggta 4980  
gcacgtttgc tattagttct ttgtgcaagt atcttagtaa taagcagttg tttgggtctc 5040  
tattcattaa gcctagtgtc tagatgtcca tcagtaaggt cggtgtcagg aacgctttaa 5100  
agccagagga atttgttaag attacttggg ttgataagct acttcctgat gcttttacta 5160  
ttcttaagta tttatctatt acagattata gtgttgtaaca gtctaaagac tatgaacatc 5220  
tcataacctgt ggatctacta cgtggcgtgg atttttcaaa gtctaaatat gttactttgg 5280  
ttggtgttgt gatctccggg gtctggacaa ttcctgagaa ttgtgccggg ggtgctaccg 5340  
tggcgtggt cgatactcg atgtccttag tgtcggaggg tactatttgt aagttttctg 5400  
tatctgcagc cagtcgggat ttacggtaa aattgattcc gaattattat gtgactgctg 5460  
ctgatgcctc ctccaaaccc tggcttttgt ttgttaggat ttctggtgtt aggatcaaag 5520  
atggtttttc tccgttaact ctggagattg cctcttttgt ggctaccacc aattctattt 5580  
taaagaaggg tctaagagtt agtgtgatcg agtccgtggt agggctctgat gcctccgtgt 5640  
cgttggatac cttgtctgaa aaggttcaac ctttttttga ttcggttccg attacggctt 5700  
cagtggatc tcgtgatagg tcttatgtgt ctaaaggctc ccctccttct cggagtggac 5760  
ctgtgtcgcg taaatctaaa agtaagagtg aggcagaatc ttttccggat agcggcgctt 5820  
ctgagccact aagttcataa tcaagatgtc ttactctact tctggtttgc gttctttgcc 5880  
tgcatatact aagtcttttt gtccttatta tgctttgtat gatctgttgg tgtcagccca 5940  
aggtggagcc ctgcaaacgc aaaatggtaa agacattttg cgtgactcca taaatgggtt 6000



## KIDUM 010 PCT.ST25.txt

gttaacgaca gttgcgtctc ctaggagtcg gttccctgcg gaagggttct ttgtctggtc 6060  
 ccgtgagtcg cgcattgctg ctatattaga ttctctgctt tcggcgttgg attcaagaaa 6120  
 tagggctatt gaagttgaaa acccttctaa tccttcgacc agtgaagctt tgaatgctac 6180  
 taagcgcaat gacgacgcgt ctactgctgc gcacaacgac attcctcagc tgatttcagc 6240  
 tttgaatgac ggtgccggtg tgtttgatag agcgtctttt gagagtcagt tcggtctagt 6300  
 atggaccgct gcgtcgtcgt ctacctgaa gtgaggcgtg gtcgctgcgt taagcgatag 6360  
 agtttttccc tcctctttaa tcgaagggtt tcccgttatg ggcgtgggtca tcacgaaaga 6420  
 tgatagagtt tttccctcct cttaaatacga agggattggt tgcgcgggtt ctaccgagcc 6480  
 tctgctgtgt gacagtaagc tggcgtaagc aattatgggt agaggtgttc gaatcacccc 6540  
 ctttgccccg ggtaggggcc ca 6562

<210> 5  
 <211> 25  
 <212> DNA  
 <213> Artificial sequence

<220>  
 <223> single strand DNA oligonucleotide

<400> 5 25  
 cgctagctat cactgaaaag acagc

<210> 6  
 <211> 26  
 <212> DNA  
 <213> Artificial sequence

<220>  
 <223> single strand DNA oligonucleotide

<400> 6 26  
 ggccatggtt atgtctgaag taaacg

<210> 7  
 <211> 32  
 <212> DNA  
 <213> Artificial sequence

<220>  
 <223> single strand DNA oligonucleotide

<400> 7 32  
 cgccatggc atcgaaggcg ggtttttgga cg

<210> 8  
 <211> 32  
 <212> DNA  
 <213> Artificial sequence

<220>  
 <223> single strand DNA oligonucleotide

<400> 8 32  
 gagtgacct agacactagg cttaatgaat ag

## KIDUM 010 PCT.ST25.txt

<210> 9  
<211> 9591  
<212> DNA  
<213> Zucchini yellow mosaic virus

<400> 9  
aaattaaaac aaatcacaaa gactacagaa atcaacgaac aagcagacga tttctaaacc 60  
gtgtttacaa acaagcaatc tataattcgc acagcatcaa gaatttctgc aatcactttg 120  
tttatttttag acacaacaat ggcctcagtt atgattgggt caatctccgt acctatcgca 180  
caacctgctc agtatgcaaa cacccaagcg agcaaccggg ttaatatagt ggcacctggc 240  
cacatggcaa catgcccacc accattgaag acgcacacat actacaggca tgagtccaag 300  
aagttgatgc aatcaaacia aagcattgac attctgaaca acttcttcag cactgacgag 360  
atgaagttaa ggctcactcg aaacgagatg agcaagggtga aaaaggggtcc gagtgggagg 420  
atagtcctcc gcaagccgaa taagcagcgg gttttcgccc gtattgagca ggatgaggca 480  
gcacgcaagg aagaggctgt tttcctcgaa ggaaattatg acgattcgat cacaatatata 540  
gcacgtgttc ttccacctga agtgactcac aacgttgatg tgagcttgcg atcaccgttt 600  
tacaagcgca catacaagaa ggaaagaaag aaagtgggtgc aaaagcaaac tgtgctagca 660  
ccacttaata gtttgtgcac acgtgttctg aaaattgctc gcaataaaaa tatccccgtt 720  
gagatgattg gcaacaagaa ggcgagacat acactcacct tcaagagggt taggggatata 780  
tttggttgaa aagtgtcagt tgcgcatgaa gaaggacgaa tgcggcatac tgagatgtcg 840  
tatgagcaat ttaaatggat tctaaaagcc atttgtcagg tcaccatac agagcgaatt 900  
cgtgaggaag atattaaacc aggctgtagt ggggtgggtgt taggcactaa tcatacattg 960  
actaaaagat attcaagatt gccacatttg gtgattcgag gtagagacga cgacgggatt 1020  
gtgaacgcgc tggaaccggt gttgttttat agcgaagttg accactattc gtcgcaaccg 1080  
gaagttcagt tcttccaagg atggcgacga atgtttgaca agcttaggcc cagcccagat 1140  
catgtgtgca aagttgacta caacaacgag gaatgtgggt agttagcagc aaccttttgt 1200  
caggctctat tcccagtagt gaaactatcg tgccaaacat gcagagaaaa acttagtaga 1260  
gttagctttg aggaatttaa agattctttg aatgcaaact ttactattca taaagatgaa 1320  
tgggataatt tcaaggaggg ctctcagtag gacaatattt tcaaattaat taaagtggca 1380  
acacaggcaa ctcagaatct caagctctca tctgaagtca tgaagttagt tcagaaccat 1440  
acaagcactc acatgaagca aatacaagat atcaacaagg cgctcatgaa aggttcattg 1500  
gttacgcaag acgaattgga cttggccttg aaacagcttc tagaaatgac tcagtgggtt 1560  
aggaaccaca tgcacctgac tgggtgaagaa gcgttgaaga tggtcagaaa caagcgctct 1620  
agcaaggcta tgataaatcc tagcctttta tgtgataacc aattggacaa gaatggaaat 1680  
tttgtctggg gggaaagagg gtatcattcc aagcgattat tcaagaactt ctttgaggaa 1740  
gtaataccaa gtgaaggata tacgaaatac gtagtgcgaa actttccaaa tgggtactcgt 1800

## KIDUM 010 PCT.ST25.txt

aagttggcca taggctcttt gattgtacca ctcaacttgg atagggcacg cactgcactt 1860  
cttggagaga gtattgagaa gaagccgctc acatcagcat gtgtctccaa acagaatgga 1920  
aattatatac actcatgctg ctgctgaacg atggatgatg gaaccccgat gtactcagaa 1980  
cttaagagcc caacgaagag gcacctagtt ataggagctt ctggtgatcc aaagtacatt 2040  
gatttaccag catctgaggc agaacgcag tatatagcaa aggaagggtta ttgctatctt 2100  
aacattttcc tcgcaatgct tgtgaatggt aacgagaacg aggcaaagga tttcactaaa 2160  
atgattcgtg atgttttgat ccctatgctt gggcaatggc cttcgttgat ggatgttgca 2220  
actgcagcat acattctagg tgtattccat cctgaaacac gatgtgctga attacctagg 2280  
attcttggtg atcaccgtac gcaaaccatg catgtcattg attcatatgg atcattaact 2340  
gttggttatc acgtgctcaa ggccggaact gtcaatcatt taattcaatt cgcctcaaat 2400  
gatctacaga gcgagatgaa gcattacaga gttggcggaa caccaacaca gcgcatcaaa 2460  
cttgaggagc agttgattaa aggaatcttc aaaccaaacc ttatgatgca gtcctgcac 2520  
gatgatccat acatattatt gcttggcatg atctcaccta ccattcttgt acacatgtat 2580  
aggatgcgtc attttgagcg aggtattgaa atatggatta agagagatca tgaaattgga 2640  
aagattttcg tcatattgga acagctcaca cggaagggtg ctctggctga agttcttggtg 2700  
gatcagctcg atttgataag cgaagcttca ccacatttac ttgaaatcat gaagggttgt 2760  
caagataatc aaagagcgta tgtacctgct ctggatttac taacgataca agtagagcgt 2820  
gagttttcaa acaaggaact taaaaccaat ggctatccag atttgcagca aacgttggtt 2880  
gatatgagag aaaaaatgta tgcaaagcaa ttgcacaatg catggcaaga gctaagcttg 2940  
ctggaaaaat cttgtgtaac cgtgcgattg aagcaattct cgatttttac ggaaagaaat 3000  
ttaatccagc gagcaaaaga aggaaagcgc acatcttcgc tacaatttgt tcacgagtgc 3060  
tttatcacga cccgagtaca tgcgaagagc attcgcgatg caggcgtgct caagctaaat 3120  
gaggctctcg ttggtacttg taagttcttt ttctcttggtg gtttcaagat ttttgcgcga 3180  
tgctacagcg acattatata cttgtgaac gtgtgtttgg tattctcctt ggtattacaa 3240  
atgtctaata ctgtacgcaa catgatagcg gcgacaaggg aagaaaaaga gagagcgatg 3300  
gcaaataagg ctgatgaaaa tgaaaggacg ttaatgcaca tgtaccacat tttcagtaag 3360  
aagcaggatg aagcgcccat atacaacgac tttcttgagc atgttcgcaa tgtgagacca 3420  
gatcttgagg aaaccctctt atacatggct ggtgcagagg ttgtagcaac acaggccaag 3480  
tcagcggttc agattcagtt cgagaagatt atagctgtat tggcgtgct cactatgtgc 3540  
tttgacgccg aaagaagcga cgccattttc aagattttga caaagctcaa aacagttttt 3600  
ggcacggttg gagaaacggt ccgacttcaa ggacttgaag atattgagag cttggaggac 3660  
gataagagac tcacaattga ctttgatatt aacacgaatg aggctcagtc gtcgacaacg 3720  
tttgatgttc attttgatga ttggtggaat cggcagctgc agcaaaatcg cacagttcca 3780  
cattacagga ccacaggtaa attcctcgaa tttaccagaa acactgcagc ttttgtggcc 3840



## KIDUM 010 PCT.ST25.txt

aatgaaatag catcatcaag tgaaggagag tttttagtca gaggagcagt gggttctgga	3900
aaatcaacga gcttgcccg acatcttgcc aagaagggtta aggtactgtt acttgaacct	3960
acacgcccct tggcggagaa tgtcagtaga cagttggcag gcgatccttt tttccaaaac	4020
gtcacactca gaatgagagg gctaaattgc tttggttcaa gtaacattac agtgatgacg	4080
agtggatttg cttttcacta ttatgttaac aatccacatc aattaatgga atttgacttt	4140
gttataatag acgagtgcc tgtcacggac agtgcgacta tagctttcaa ttgtgcgctt	4200
aaggagtata actttgctgg caaattgatt aaagtgtctg caacgccgcc agggagagag	4260
tgtgatttcg atacgcaatt cgcgggttaa gtcaaacgg aggaccacct ttcattccat	4320
gcattcgttg gcgcacagaa gaccggttca aatgctgaca tggttcagca tggcaataac	4380
atacttgtgt atgttgcaag ttacaacgaa gtggacatgc tttccaagtt actcactgag	4440
cgacaatttt cagtgcagaa ggtagatggg cgaacaatgc aacttgggaa aactaccatt	4500
gaaacgcatg gaactagcca aaagcctcat ttcatagtag ctagaacat catcgaaaat	4560
ggagtgcagt tggatgttga gtgtgttgtt gattttggac tgaaagtggc cgcagaatta	4620
gacagcgaat atcggtgtgt gcgctacaac aagaaatcag ttagttatgg ggaaaggatt	4680
cagcggctag ggagagtggg gagatctaag cctggaacgg cattgcgtat agggcacaca	4740
gaaaaaggca tcgagagcat tcctgaattc attgccacag aagcagcagc cctatcgttt	4800
gcctatgggc ttccagtcac tacgcatggg gttccacaa atatactcg aaagtgcaca	4860
gtcaagcaga tgagatgtgc tttgaatttc gagctaactc ctttcttcac cactcatcta	4920
atccgtcatg atggcagtat gcacccattg atacacgaag aattaaaaca attcaaactc	4980
agggattcag aaatgggtgct caacaagggt gcattacctc accaatttgt gagtcaatgg	5040
atggatcaaa gtgagtatga acgcattgga gtgcacgttc aatgtcatga gagcacacgc	5100
atacctttct acacaaatgg agtgcctgac aaggctctatg agaaaatttg gaagtgcata	5160
caagaaaaca agaatgatgc ggtttttggg aagctctcaa gcgcttggtc gactaagggtc	5220
agttatacac tcagcactga cccagcagca ttaccagaa ccattgcaat catcgaccac	5280
ctgcttgccg aggaaatgat gaagcggaat cacttcgaca cgattagctc agctgtgacg	5340
ggttattcat tttccctcgc tgggaattgct gattctttta ggaagagata catgcgtgat	5400
tacacagcgc acaacattgc aattcttcaa caagcacgtg cccagctgct cgagttcaat	5460
agcaaaaatg tgaacatcaa caacctgtcc gatctggaag gaattggagt tattaagtcg	5520
gtggtgttgc aaagtaaaca agaggtcagc aacttcttag gacttcgcgg taaatgggat	5580
ggacggaaat ttgcgaacga tgtgatattg gcgattatga cactcttagg aggtggatgg	5640
ttcatgtggg aatacttcac gaaaaagatc aatgaacctg tgcgcgttga aagcaagaaa	5700
cggcgatctc aaaagttgaa attcagggat gcatacgata ggaaggctcg acgtgagatc	5760
tttggcgatg atgacacaat tgggcgcact tttggcgaag cttacacgaa gagaggaaaag	5820
gtcaaaggaa acaacagcac aaaaggaatg ggacggaaaa ctcgcaattt tgtgcattta	5880

## KIDUM 010 PCT.ST25.txt

tatggtgtgg agcctgagaa ttacagcttc atcagatttg tggaccctct cactggccat 5940  
 acattggacg aaagcaccca tacagacata tcgttagtgc aggaggagt tggaaatatt 6000  
 agagagaaat ttctggagaa tgatttgatc tcaaggcagt ctattatcaa caaaccggt 6060  
 attcaggcat attttatggg caagggcact gaagaagcac tcaaagttga tttgactcct 6120  
 catgtaccat tgcttctgtg caaaaacacc aatgccattg cgggataccc agagagagaa 6180  
 aatgagctga gacaaactgg cacaccagtc aaggtttctt ttaaagacgt gccagagaaa 6240  
 aacgaacatg tcgagttgga gagcaaatcc atctacaaag gagtgcgcga ttataatggc 6300  
 atctcaacaa tcgtctgtca attaacgaat gattctgatg gcctcaagga gactatgtat 6360  
 ggtattggct atgggcccgat aatcatcact aatggacacc tcttcaggaa aaacaatggc 6420  
 acacttctag tcaggtcttg gcatggtgaa ttcactgtaa aaaataccac aacgctcaaa 6480  
 gtgcatttca tagaaggaaa ggatgttggt ttagtgcgta tgccaaagga ctttccaccg 6540  
 tttaaaagca acgcttcttt tagggcacca aagcgcgagg aacgagcatg tttggttgga 6600  
 acgaattttc aagagaagag tctccgctcc actgtttcag aatcttccat gacaatacct 6660  
 gaaggaactg gctcatattg gattcactgg atttcgacca acgaagggga ttgcggatta 6720  
 cccatggttt caacaacgga tggcaagata attggagttc atggtttggc ttccacggtc 6780  
 tcatccaaga attattttgt cccatttact gatgatttta tagccacgca tttgagcaag 6840  
 cttgacgatc tcacatggac tcaacattgg ctatggcaac ctagtaaaat cgcgtggggc 6900  
 acgcttaact tagttgatga acaaccaggg cctgaatttc gtatttcaaa tctagtaaag 6960  
 gatttggtca cttctggtgt tgaaacacag agcaagcgag aaagatgggt ctacgaaagc 7020  
 tgtgaaggga accttcgagc tggtggaact gcacaatcag cgctagtcac caaacatggt 7080  
 gtaaaaggca agtgtccttt cttcgaagaa tacttgcaaa ctcacgcaga agcgagcgct 7140  
 tacttcagac ctttgatggg agaataccag cctagcaagt tgaacaaaga ggcctttaa 7200  
 aaggatttct tcaaatacaa taaaccgctc actgttaatc aattggatca cgataaattc 7260  
 ttggaagcag ttgatggggt tatacgtatg atgtgcgact ttgaattcaa tgagtgccga 7320  
 ttcattacag accccgagga aatttataac tctttgaaca tgaaagcagc aattggagcc 7380  
 cagtatagag gaaagaagaa agagtatttt gaagggctag atgattttga tcgagagcga 7440  
 cttttatttc agagttgtga aaggttgttt aatggctaca aaggctctgtg gaatggatct 7500  
 ttaaaggccg agctcaggcc gcttgagaaa gtcagggcca acaaaacacg aacttttaca 7560  
 gcagcgccca ttgatacatt gctcggagct aaagtttgcg tggatgattt caataatgaa 7620  
 ttttatagca aaaacctcaa gtgtccatgg acggttgga tgacgaaatt ttatggtggt 7680  
 tgggatagat tgatgagatc attacctgat ggttggttat attgtcatgc tgatggatca 7740  
 cagtttgaca gttcattgac cccagcctta ctgaatgcag tgcttataat ccgatcattt 7800  
 tatatggagg attggtgggt cggctcaagag atgcttgaaa atctttatgc tgagattgtg 7860  
 tacactccaa ttcttgctcc ggatggaaca attttcaaga aatttagagg taacaacagt 7920

KIDUM 010 PCT.ST25.txt

```

gggcaaccct caacagtggg ggataacaca ctaatgggtg tgatctctat ttactatgcg 7980
tgcataaagt ttggttgga ttgcgaggaa attgagaata gacttatctt ctttgcaaat 8040
ggagatgata tgatacttgc agtcaaagat gaggatagcg gcttacttga taacatgtca 8100
gcttcttttt ccgaactcgg actgaattat gatttttcag aacgcacgca caaaagagaa 8160
gatctttggg tcatgtccca ccaagcaatg ttagttgatg gaatgtacat tccaaaactc 8220
gagaaagaaa gaattgtttc aattctagag tgggatagaa gcaaagaaat catgcaccga 8280
acagaggcta tttgcgctgc gatgattgag gcatgggggc acaccgagct tttgcaagaa 8340
atcagaaagt tttacctatg gttcgttgag aaagaggaag tgcgagaatt agctgccctc 8400
ggaaaagctc catacatagc tgagacagca cttcgcaagt tatatactga caaaggagcg 8460
gaaacaagtg aattggcacg ctacctaca gccctccatc aagatatctt ctttgaacaa 8520
ggagacaccg taatgctcca atcaggcact cagccaactg cggcagacgc tggggccaca 8580
aagaaagaca aagaggatga caaagggaaa aacaaggatg ttacaggctc cggctcaggt 8640
gagaagacag tagcagctgt cacgaaggac aaggatgtga acgctgggtc tcatgggaaa 8700
attgtgccgc gtctttcgaa gatcacaag aagatgtcac tgccacgcgt gaaaggaaaa 8760
gtcatactcg atatcgatca tttgctggaa tataagccgg atcaaattga gttgtataac 8820
acacgagcgt ctcacagca attttcctcc tggtttaatc aagttagaac agaatatgat 8880
ttgaatgagc aacagatggg agttgtaatg aatggtttca tggtttggtg cattgaaaat 8940
ggcacttcgc ctgatatcaa tggagtgtgg ttcacgatgg atggagatga gcaggctcag 9000
tatcctttga aaccaatagt cgaaaatgca aagccaacgc tgcgacaaat aatgcatcac 9060
ttctcagatg cagcggaggc atacatagaa atgagaaatg cagaggcacc atacatgccg 9120
aggtatgggt tgcttcgaaa tctacgggat aggagtttgg ctcgatacgc tttcgacttc 9180
tacgaagtca actctaaaac tctgaaaga gcccgcgag ctgttgcgca gatgaaagca 9240
gcagctctta gcaatgtttc ttcaagggtg tttggccttg atggaaatgt tgccaccact 9300
agcgaagaca ctgaacggca cactgcacgt gatgttaata gaaacatgca caccctgtta 9360
ggtgtgaaca caatgcagta aagggtaggt cacctaccta ggttatcgat tcgctgccga 9420
cgtaattcta atattttaccg ctttttatga tatctttaga tttcagtggt ggcctccac 9480
ctttaagcg taaagtttat gttagttgtc caggaatgcc gtagtcctgt cggaagcttt 9540
agtgtgagcc tctcacggat aagctcgaga ttagactccg tttgcaagcc t 9591

```

<210> 10  
 <211> 37  
 <212> DNA  
 <213> Artificial sequence

<220>  
 <223> single strand DNA oligonucleotide

<400> 10  
 atggatccct gcagtcaggc actcagccaa ctgtggc

37

## KIDUM 010 PCT.ST25.txt

<210> 11  
<211> 32  
<212> DNA  
<213> Artificial sequence

<220>  
<223> single strand DNA oligonucleotide

<400> 11  
atggcgccgg taccaggctt gcaaacggag tc 32

<210> 12  
<211> 18  
<212> DNA  
<213> Artificial sequence

<220>  
<223> single strand DNA oligonucleotide

<400> 12  
gctacggagc gtccgcgg 18

<210> 13  
<211> 20  
<212> DNA  
<213> Artificial sequence

<220>  
<223> single strand DNA oligonucleotide

<400> 13  
cgcggtcgac tgtatgtcat 20

<210> 14  
<211> 20  
<212> DNA  
<213> Artificial sequence

<220>  
<223> single strand DNA oligonucleotide

<400> 14  
tctgaccaga ctaccgaaaa 20

<210> 15  
<211> 20  
<212> DNA  
<213> Artificial sequence

<220>  
<223> single strand DNA oligonucleotide

<400> 15  
atggcttaca atccgatcac 20

<210> 16  
<211> 30  
<212> DNA  
<213> Artificial sequence

<220>  
<223> single strand DNA oligonucleotide

## KIDUM 010 PCT.ST25.txt

<400> 16  
gagaggatcc atgtttctaa gtcaggtcct 30

<210> 17  
<211> 31  
<212> DNA  
<213> Artificial sequence

<220>  
<223> single strand DNA oligonucleotide

<400> 17  
gagagaattc tcactttgag gaagtagcgc t 31

<210> 18  
<211> 18  
<212> DNA  
<213> Artificial sequence

<220>  
<223> single strand DNA oligonucleotide

<400> 18  
tctatcgctt aacgcagc 18

<210> 19  
<211> 20  
<212> DNA  
<213> Artificial sequence

<220>  
<223> single strand DNA oligonucleotide

<400> 19  
atgtcttact ctacttctgg 20

<210> 20  
<211> 19  
<212> DNA  
<213> Artificial sequence

<220>  
<223> single strand DNA oligonucleotide

<400> 20  
caagacgagg tagacgaac 19

<210> 21  
<211> 19  
<212> DNA  
<213> Artificial sequence

<220>  
<223> single strand DNA oligonucleotide

<400> 21  
atgccttact ctaccagcg 19